

LISTING OF THE CLAIMS:

1. (Withdrawn from consideration) A transgenic plant which is tolerant to a salt, comprising one or more plant cells transformed with exogenous nucleic acid which alters expression of vacuolar pyrophosphatase in the plant.
2. (Withdrawn from consideration) The transgenic plant of claim 1 wherein the exogenous nucleic acid encodes AVP1 or a homologue thereof.
3. (Withdrawn from consideration) The transgenic plant of Claim 2 wherein the homologue of AVP1 is obtained from tobacco, bacteria, tomato or corn.
4. (Withdrawn from consideration) The transgenic plant of Claim 2 wherein the AVP1 is present in a construct designed to overexpress AVP1 or designed to down regulate endogenous pyrophosphatase.
5. (Withdrawn from consideration) The transgenic plant of Claim 4 wherein the construct comprises AVP1 operably linked to a double tandem enhancer of a 35S promoter.
6. (Withdrawn from consideration) The transgenic plant of Claim 2 wherein the AVP1 is derived from a wild type plant that corresponds to a wild type of the transgenic plant.
7. (Withdrawn from consideration) The transgenic plant of Claim 2 wherein the AVP1 is derived from a wild type plant that does not correspond to a wild type of the transgenic plant.
8. (Withdrawn from consideration) A transgenic plant which grows in a concentration of a salt that inhibits growth of a corresponding non-transgenic plant.
9. (Withdrawn from consideration) The transgenic plant of Claim 8 wherein the concentration of salt is about 0.2M to about 0.3M.
10. (Withdrawn from consideration) The transgenic plant of Claim 1 wherein the plant is larger than a corresponding non-transgenic plant.
11. (Withdrawn from consideration) A transgenic progeny of the transgenic plant of Claim 1.
12. (Withdrawn from consideration) Seeds produced by the transgenic plant of Claim 1.
13. (Withdrawn from consideration) A progeny transgenic plant grown from seed of Claim 12.

14. (Withdrawn from consideration) A transgenic plant which is tolerant to a salt comprising an exogenous nucleic acid construct which is designed to overexpresses AVP1 or designed to down regulate endogenous pyrophosphatase.
15. (Withdrawn from consideration) A transgenic progeny of the transgenic plant of Claim 14.
16. (Withdrawn from consideration) Seeds produced by the transgenic plant of Claim 14.
17. (Withdrawn from consideration) A progeny transgenic plant grown from seed of Claim 16.
18. (Withdrawn from consideration) The transgenic plant of Claim 14 wherein the construct comprises an AVP1 gene operably linked to a double tandem enhancer of a 35S promoter.
19. (Withdrawn from consideration) A construct comprising an AVPI gene operably linked to a chimeric promoter designed to overexpress AVPI or designed to down regulate endogenous pyrophosphatase.
20. (Withdrawn from consideration) The construct of Claim 19 wherein the AVP1 gene is operably linked to a double tandem enhancer of a 35S promoter.
21. (Withdrawn from consideration) A transgenic plant obtained by introducing into a plant exogenous nucleic acid which alters expression of vacuolar pyrophosphatase in the plant.
22. (Withdrawn from consideration) Plant cells comprising exogenous nucleic acid which alters expression of vacuolar pyrophosphatase in the plant cell.
23. (Withdrawn from consideration) The plant cells of Claim 22 wherein the plant cells are root cells or stem cells.
24. (Withdrawn from consideration) The plant cells of Claim 22 wherein the exogenous nucleic acid encodes A^{VP}i.
25. (Withdrawn from consideration) The plant cells of Claim 24 wherein the AVP1 is present in a construct designed to overexpress AVPI or designed to down regulate endogenous pyrophosphatase.
26. (Withdrawn from consideration) The plant cells of Claim 25 wherein the construct comprises the AVPI gene operably linked to a chimeric promoter designed to overexpress AVP1.

27. (Withdrawn from consideration) The plant cells of Claim 26 wherein the AVPI gene is operably linked to a double tandem enhancer of a 35S promoter.
28. (Withdrawn from consideration) The plant cells of Claim 24 wherein the AVP1 is derived from a wild type plant that corresponds to a wild type of the transgenic plant.
29. (Withdrawn from consideration) The plant cells of Claim 24 wherein the AVP1 is derived from a wild type plant that does not correspond to a wild type of the transgenic plant.
30. (Withdrawn from consideration) A method of making a transgenic plant which is tolerant to a salt comprising introducing into one or more cells of a plant exogenous nucleic acid which alters expression of vacuolar pyrophosphatase in the plant to yield transformed cells in the plant, thereby producing a transgenic plant which is tolerant to the salt.
31. (Withdrawn from consideration) The method of Claim 30 further comprising regenerating plants from the transformed cells to yield transgenic plants and selecting a transgenic plant which is tolerant to the salt, thereby producing a transgenic plant which is tolerant to the salt.
32. (Withdrawn from consideration) The method of Claim 30 wherein the exogenous nucleic acid encodes AVPI.
33. (Withdrawn from consideration) The method of Claim 32 wherein the AVP1 is present in a construct designed to overexpress AVP1 or designed to down regulate endogenous pyrophosphatase.
34. (Withdrawn from consideration) The method of Claim 33 wherein the construct comprises the AVP1 gene operably linked to a chimeric promoter designed to overexpress AVP1.
35. (Withdrawn from consideration) The method of Claim 34 wherein the AVP1 gene is operably linked to a double tandem enhancer of a 35S promoter.
36. (Withdrawn from consideration) The method of Claim 32 wherein the AVP1 is derived from a wild type plant that corresponds to a wild type of the transgenic plant.
37. (Withdrawn from consideration) The method of Claim 32 wherein the AVP1 is derived from a wild type plant that does not correspond to a wild type of the transgenic plant.
38. (Withdrawn from consideration) The method of Claim 30 wherein the plant is tolerant to a concentration of salt that inhibits growth of a corresponding non-transgenic plant.

39. (Withdrawn from consideration) The transgenic plant of Claim 38 wherein the concentration of salt is about 0.2M to about 0.3M.
40. (Withdrawn from consideration) A transgenic plant produced by the method of Claim 30.
41. (Withdrawn from consideration) A method of making a transgenic plant which is tolerant to a salt comprising introducing into one or more cells of a plant a nucleic acid construct which is designed to overexpress AVP1 to yield transformed cells thereby producing a transgenic plant which is tolerant to the salt.
42. (Withdrawn from consideration) The method of Claim 41 further comprising regenerating plants from the transformed cells to yield transgenic plants and selecting a transgenic plant which is tolerant to the salt, thereby producing a transgenic plant which is tolerant to the salt.
43. (Withdrawn from consideration) A transgenic plant produced by the method of Claim 41.
44. (Withdrawn from consideration) A method of making a transgenic plant which is larger than its corresponding wild type plant comprising introducing into one or more cells of a plant nucleic acid which alters expression of vacuolar pyrophosphatase in the plant to yield transformed cells, thereby producing a transgenic plant which is larger than its corresponding wild type plant.
45. (Withdrawn from consideration) The method of Claim 44 further comprising regenerating plants from the transformed cells to yield transgenic plants and selecting a transgenic plant which is larger than its corresponding wild type plant, thereby producing a transgenic plant which is larger than its corresponding wild type plant.
46. (Withdrawn from consideration) The method of Claim 44 wherein the exogenous nucleic acid encodes AVP1.
47. (Withdrawn from consideration) The method of Claim 46 wherein the AVP1 is present in a construct designed to overexpress AVP1 or designed to down regulate endogenous pyrophosphatase.
48. (Withdrawn from consideration) The method of Claim 47 wherein the construct comprises the AVPI gene operably linked to a chimeric promoter designed to overexpress AVP1.
49. (Withdrawn from consideration) The method of Claim 48 wherein the AVP1 gene is operably linked to a double tandem enhancer of a 35S promoter.
50. (Withdrawn from consideration) The method of Claim 46 wherein the AVP1 is derived from a wild type plant that corresponds to a wild type of the transgenic plant.

51. (Withdrawn from consideration) The method of Claim 46 wherein the AVP1 is derived from a wild type plant that does not correspond to a wild type of the transgenic plant.
52. (Withdrawn from consideration) The method of Claim 44 wherein the transgenic plant is grown in soil.
53. (Withdrawn from consideration) The method of Claim 44 wherein the transgenic plant is grown hydroponically.
54. (Withdrawn from consideration) A transgenic plant produced by the method of Claim 44.
55. (Withdrawn from consideration) A method of bioremediating soil comprising growing one or more transgenic plants and/or progeny thereof in the soil, wherein the transgenic plants and/or progeny thereof comprise exogenous nucleic acid which alters expression of vacuolar pyrophosphatase in the plant.
56. (Withdrawn from consideration) A method of increasing the yield of a plant comprising introducing into one or more cells of a plant nucleic acid which alters expression of vacuolar pyrophosphatase in the plant to yield transformed cells, thereby increasing the yield of the plant.
57. (Withdrawn from consideration) The method of Claim 56 further comprising regenerating plants from the transformed cells to yield transgenic plants and selecting a transgenic plant which is larger than its corresponding wild type plant, thereby increasing the yield of the plant.
58. (Withdrawn from consideration) A method of removing cations from a medium which can support plant growth comprising growing one or more transgenic plants and/or progeny thereof in the medium, wherein the transgenic plants and/or progeny thereof comprise exogenous nucleic acid which alters expression of vacuolar pyrophosphatase in the plant.
59. (Withdrawn from consideration) The method of Claim 58 wherein the medium is selected from the group consisting of soil and water.
60. (Withdrawn from consideration) The method of Claim 58 wherein the cations are selected from the group consisting of: sodium, calcium, manganese and lead.
61. (Withdrawn from consideration) A method of producing a transgenic plant which grows in saltwater comprising introducing into one or more cells of a plant exogenous nucleic acid which alters expression of vacuolar pyrophosphatase in the plant to yield transformed cells, thereby producing a transgenic plant which can grow in salt water.
62. (Withdrawn from consideration) The method of Claim 61 further comprising regenerating plants from the transformed cells to yield transgenic plants and selecting a

transgenic plant which grow in saltwater, thereby producing a transgenic plant which can grow in salt water.

63. (Withdrawn from consideration) The method of Claim 61 wherein the concentration of the salt water is from about 0.2M to about 0.3M.

64. (Withdrawn from consideration) The method of Claim 63 wherein the salt water is seawater.

65-73 (Canceled)

74. (Withdrawn from consideration) A method of making a transgenic plant having increased flower size compared to its corresponding wild type plant comprising introducing into one or more cells of a plant nucleic acid which alters expression of vacuolar pyrophosphatase in the plant to yield transformed cells, thereby producing a transgenic plant having increased flower size compared to its corresponding wild type plant.

75. (Withdrawn from consideration) The method of Claim 74 wherein the exogenous nucleic acid encodes AVP1.

76. (Withdrawn from consideration) A transgenic plant produced by the method of Claim 74.

77. (New) A transgenic plant having incorporated into its genome a chimeric Na⁺/H⁺ antiporter gene or a chimeric vacuolar pyrophosphatase gene each operably linked to a 35S (CaMV) promoter double tandem enhancer gene that causes overexpression of said gene in said plant.

78. (New) The transgenic plant of claim 77 having incorporated into its genome the chimeric Na⁺/H⁺ antiporter gene..

79. (New) The transgenic plant of claim 78 wherein the antiporter gene is *AtNHX1* that expresses *AtNHX1* protein.

80. (New) The transgenic plant of claim 77 selected from the group consisting of tomato, tobacco, rice, tobacco, sorghum, cucumber, lettuce, turf grass, *Arabidopsis* and corn.

81. (New) A progeny or seed harboring the chimeric antiporter gene from the transgenic plant of claim 77.

82. (New) The transgenic plant of claim 77 having incorporated into its genome the chimeric vacuolar pyrophosphatase gene.

83. (New) The transgenic plant of claim 82 wherein the vacuolar pyrophosphatase gene is a plant or yeast gene.
84. (New) The transgenic plant of claim 83 wherein the vacuolar pyrophosphatase gene is *AVP1*.
85. (New) A progeny or seed harboring the chimeric vacuolar pyrophosphatase gene of claim 84.
86. (New) A transgenic plant having incorporated into its genome a chimeric vacuolar pyrophosphatase gene and a Na^+/H^+ exchanger gene, each operably linked to a 35S (CaMV) promoter double tandem enhancer gene that causes overexpression of the vacuolar pyrophosphatase gene and the Na^+/H^+ exchanger gene in said plant.
87. (New) The transgenic plant of claim 86 wherein the vacuolar pyrophosphatase gene is *AVP1*.
88. (New) The transgenic plant of claim 86 wherein the Na^+/H^+ exchanger gene is *AtNHX1*.
89. (New) A progeny or seed harboring the vacuolar pyrophosphatase gene and the Na^+/H^+ exchanger gene of claim 86.
90. (New) A plant cell from the transgenic plant of claim 86 having incorporated into its genome a chimeric vacuolar pyrophosphatase gene and a Na^+/H^+ exchanger gene, each operably linked to a 35S (CaMV) promoter double tandem enhancer gene that causes overexpression of the vacuolar pyrophosphatase gene and the Na^+/H^+ exchanger gene in said cell.
91. (New) The transgenic plant of claim 78 wherein the chimeric antiporter gene incorporated into its genome encodes an amino acid sequence selected from the group consisting of SEQ ID NO. 1, SEQ ID NO. 2 and SEQ ID NO. 3.
92. (New) A progeny or seed which incorporates into its genome the chimeric antiporter gene of the transgenic plant of claim 91.
93. (New) The transgenic plant of claim 1 wherein said antiporter gene overexpresses a protein having the amino sequence of SEQ ID NO. 2.
94. (New) The transgenic plant of claim 91 wherein said antiporter gene overexpresses a protein having the sequence of SEQ ID NO. 3.

95. (New) A transformed plant host cell comprising an antiporter gene that encodes a protein having enhanced proton transporter activity in said cell compared to a counterpart unmodified antiporter gene.
96. (New) A method for producing a genetically transformed plant that exhibits salt tolerance to one or more salts selected from the group consisting of NaCl, KCl and CaCl₂, comprising the steps of:
- a) inserting into the genome of a plant cell a chimeric gene, which comprises
 - i) a DNA sequence encoding an amino acid sequence selected from the group consisting of SEQ ID NO. 1, SEQ ID NO. 2 and SEQ ID NO. 3;
 - ii) a 35S CaMV promoter operably linked to the DNA sequence of step i);
 - iii) a double tandem enhancer of said promoter
 - b) obtaining the transformed plant cells; and
 - c) regenerating a genetically transformed plant from said plant cell wherein said plant exhibits salt tolerance.
97. (New) The genetically transformed plant of claim 96 selected from the group consisting of tomato, tobacco, rice, sorghum, cucumber, lettuce, turf grass, Arabidopsis and corn.